1. (original) A method of ultrasonically imaging blood perfusion and blood flow in a region of interest of a body comprising:

acquiring a sequence of ultrasonic echo signals from a body which has been infused with an ultrasonic contrast agent;

processing the echo signals to detect the tissue structure in the absence of microbubbles;

processing a plurality of the echo signals in a first way to detect echo signals returned from tissue microvasculature perfused with the contrast agent;

processing a plurality of the echo signals in a second way to detect echoes returned from blood flow containing the contrast agent in larger vessels;

utilizing the echo signals processed the first way to form a portion of an image depicting perfusion;

utilizing the echo signals processed the second way to form a portion of an image depicting blood flow in larger vessels; and

displaying an ultrasound image depicting both contrast-enhanced perfusion and contrast-enhanced blood flow.

2. (original) The method of Claim 1, wherein displaying further comprises depicting both the presence and locations of microbubbles in tissue and the velocity of microbubbles in blood flow.

3. (original) The method of Claim 1, further comprising deciding the portion of the image which an echo signal is to form on the basis of a blood flow velocity estimation.

4. (original) The method of Claim 3, wherein deciding further comprises deciding the portion of the image which an echo signal is to form on the basis of a blood flow variance estimation.

5. (original) The method of Claim 1, wherein processing a plurality of echo signals in first and second ways comprises processing the same ensemble of echo signals in first and second ways.

6. (original) The method of Claim 1, wherein acquiring a sequence of ultrasonic echo signals further comprises acquiring an ensemble of echoes over time from each of a plurality of different locations in the body.

7. (original) The method of Claim 1, wherein processing a plurality of the echo signals in a first way comprises detecting the amplitude or power of the echo signals; and

wherein processing a plurality of the echo signals in a second way comprises Doppler processing the plurality of the echo signals.

8. (original) The method of Claim 7, wherein processing a plurality of the echo signals in both the first way and the second way both include detecting nonlinear components of the echo signals by the pulse inversion technique.

9. (original) The method of Claim 1, wherein utilizing the echo signals processed the first way further comprises forming a perfusion image; and

wherein utilizing the echo signals processed the second way further comprises forming a flow image; and

wherein displaying an ultrasound image further comprises displaying the perfusion image overlaid with the flow image.

10. (original) The method of Claim 1, further comprising transmitting a plurality of differently modulated transmit pulses in each of a plurality of different beam directions;

wherein processing a plurality of the echo signals in both the first way and the second way both include detecting harmonic components of the echo signals by the pulse inversion technique.

11. (currently amended) An ultrasonic diagnostic imaging system for imaging both perfusion and flow in a body infused with a contrast agent in accordance with the method of Claim 1 comprising:

an ultrasonic transducer array operated to transmit a plurality of pulses in each of a plurality of different beam directions and to

receive echoes in response to the pulses;

a beamformer coupled to the transducer array;

a first processor for processing a plurality of the echo signals in the first way which is coupled to the beamformer and responsive to pluralities of echo signals for detecting echoes returned from perfused tissue;

a second processor for processing a plurality of the echo signals in the second way which is coupled to the beamformer and responsive to ensembles of echo signals for detecting echoes returned from blood flow containing contrast in larger vessels;

a decision processor, coupled to the first and second processors, for identifying signals to be displayed on the basis of velocity;

an image memory for the utilizing steps which is responsive to the decision circuit which acts to utilize signals produced by the first and second processors to form a perfusion image portion and a flow image portion; and

a display for the displaying step which is coupled to the image memory which displays an ultrasound image which depicts both contrast perfused tissue and the flow in larger vessels in a common image.

12. (original) The ultrasonic diagnostic imaging system of Claim 11, wherein the second processor includes a first signal path which Doppler processes nonlinear echo ensembles and a second signal path which Doppler processes fundamental frequency echo ensembles,

wherein the display displays an image of nonlinear Doppler processed flow in the near field and fundamental frequency Doppler processed flow in the far field.

13. (original) The ultrasonic diagnostic imaging system of Claim 11, further comprising a transmitter, coupled to the transducer array, which acts to transmit a plurality of differently modulated beams in each of a plurality of different beam directions.

14. (original) The ultrasonic diagnostic imaging system of Claim 13, wherein each of the first and second processors process harmonic signals separated by the pulse inversion technique.

15. (original) The ultrasonic diagnostic imaging system of Claim 11, wherein the decision processor acts to identify signals to be displayed on the basis of velocity variance.

16. (original) The ultrasonic diagnostic imaging system of Claim 15, further comprising a velocity variance estimator responsive to echo signals processed by the first and second processors and coupled to the decision processor.

17. (original) The ultrasonic diagnostic imaging system of Claim 11, wherein the image memory comprises a first image buffer for storing a perfusion image and a second image buffer for storing a flow image.

18. (original) The ultrasonic diagnostic imaging system of Claim 11, further comprising a tissue signal processor which acts to detect echoes from tissue in the absence of microbubbles.

19. (original) The ultrasonic diagnostic imaging system of Claim 18, wherein the display acts to selectively display an image which is less than all of the combination of a tissue image component, a perfusion image component, and a flow image component.

20. (original) The ultrasonic diagnostic imaging system of Claim 19, further comprising means for adjusting the opacity of one of the image components to be semi-transparent, whereby obscured tissue or flow may be visualized through the semi-transparent image component.